

### **Caveats and Assumptions**

WLA  $\leq 0$ . When the ambient concentration exceeds or nearly exceeds the criterion (C), the WLA would be less than or equal to 0. Many states use an approach that when WLA  $\leq 0$ , then the WLA = C. The RPA submitted today uses this assumption.

Calculation of Average Monthly Limits (AMLs). By calculating the LTAc at the 95th Percentile and calculating an AML at the 95th Percentile (with 4 samples per month), the AML is equal to the WLA.

Summary. Because cases exist where the WLA  $\leq 0$ , the breakdown of effluent limits also includes a category for facilities that fall into this scenario.

Roundup WWTP (MT0030295): The RPA was performed for the two outfalls listed in Roundup WWTP's permit. Both outfalls discharge the same treated effluent from the facility, but Outfall 001 discharges to the Musselshell River, whereas Outfall 002 discharges to impoundments/wetlands. While Outfall 002 doesn't discharge to a surface water, a RPA was done for this outfall because its effluent is the same as what is discharged to the Musselshell River at Outfall 001.

Color coding of tabs. Each facility's tab is color-coded in Red, Yellow, or Green: red is for discharges with RP for TN and/or TP; yellow is for discharges that have assumptions made for the critical ambient flow, regardless of the RP result; and green is for discharges with no RP for TN and TP.

**TN\_CALC.** This field was calculated by summing NO<sub>2</sub>/NO<sub>3</sub> and TKN for observations when TN was not present.

## **Distribution of Total Nitrogen Effluent Limitations**

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<b>No WQBELs required for TN</b>	MT0020001	Miles City WWTP
	MT0020044	Lewistown WWTP
	MT0020303	Bridger WWTP
	MT0020354	Harlowton WWTF, City of
	MT0020478	Red Lodge WWTF
	MT0020656	Hinsdale County Water and Sewer District WWTP
	MT0020753	Big Timber WWTF, City of
	MT0030732	Ennis WWTP
<b>AML &lt; 2.5 mg/L</b>	MT0020052	Choteau Sewage Treatment Ponds
	MT0021750	Absarokee Sewer District WWTP
	MT0022713	Stevensville WWTP
<b>AML 2.5-4.9 mg/L</b>	MT0020028	Hamilton WWTP, City of
	MT0020125	Chinook WWTP
<b>AML 5-6.9 mg/L</b>	MT0022535	Havre WWTP, City of
	MT0030309	Grass Range WWTP, Town of
<b>AML ≥ 7 mg/L</b>	MT0021440	Vaughn WWTF
	MT0028665	Sun Prairie Village WWTP
	MT0030295	Roundup WWTP, City of <b>(Outfalls 001 &amp; 002)</b>
<b>AML = WQC</b>	MT0021211	Glasgow WWTF, City of
	MT0021857	Manhattan WWTF
	MT0023566	Elkhorn Health Care WWTF

2017-010046-0000160

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020001

Miles City WWTP

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
4,193	4,193	4,193
100%	100%	100%
2709.9359	2709.9359	2709.9359
0.4595	0.4595	0.04755
1.98	1.98	1.98
36.6	36.6	3.68
12	15	15
0.27457	0.25800	0.17715
0.77908	0.81896	0.81896
0.76908	0.91142	0.91142
1.26260	1.20133	1.13544
46.21131	43.96875	4.17841
2711.9159	2711.9159	2711.9159

0.493	0.491	0.051
0.655	0.655	0.055

no            no            no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020028

Hamilton WWTP, City of

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

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%tile for n samples at 95% confidence level

Z-score for Pn

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critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
243.7		243.7
100%		100%
157.50331	0	157.50331
0.1625		0.009
1.984		1.984
11		8.3
10		10
0.61520		0.26025
0.74113		0.74113
0.64685		0.64685
1.74939		1.28751
19.24328		10.68637
159.48731	0	159.48731

0.400		0.142
0.3		0.03

yes              no              yes

4.15572		1.30611
2.65138		1.06427
4	4	4
4.15572		1.30611

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020044

Lewistown WWTP

001

**Description**

critical stream flow (7Q10) [cfs]

% of Qs being provided (as decimal, e.g. -.10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) [**converted to MGD**]

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) [**MGD**]

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
83	83	83
100%	100%	100%
53.6429	53.6429	53.6429
0.6	0.6	0.01825
2.5	2.5	2.5
6.45	7.94	0.97
7	7	15
0.6	0.6	0.51355
0.65184	0.65184	0.81896
0.39028	0.39028	0.91142
1.99303	1.99303	1.41848
12.85506	15.82468	1.37593
56.1429	56.1429	56.1429

1.146	1.278	0.079
1.3	1.3	0.15

no            no            no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020052

Choteau Sewage Treatment Ponds

001

**Description**

critical stream flow (lowest seasonal flow from DMRs) [cfs]

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) [**converted to MGD**]

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) [**MGD**]

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
0.27851		0.27851
100%		100%
0.18	0	0.18
0.26		0.012
0.3		0.3
20.27		2.7
11		11
0.75435		0.83699
0.76160		0.76160
0.71145		0.71145
1.85742		1.95861
37.64981		5.28824
0.48	0	0.48

23.629		3.310
1.3		0.11

yes            no            yes

1.83863		0.16486
1.07852		0.09229
4	4	4
1.83863		0.16486

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020125

Chinook WWTP

001 (Seasonal DMR data, 2013-2015)

**Description**

critical stream flow (7Q10) **[cfs]**

% of Qs being provided (as decimal, e.g. -.10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)


TN	TN_calc	TP
6.4		6.4
100%		100%
4.13632	0	4.13632
0.6725		0.06725
0.5		0.5
14.1		3.12
10		10
1.00427		0.29105
0.74113		0.74113
0.64685		0.64685
2.28048		1.32511
32.15482		4.13434
4.63632	0	4.63632

4.068		0.506
1.3		0.11

yes              no              yes

3.44643		0.15919
1.76778		0.12678
4	4	4
3.44643		0.15919

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020303

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Bridger WWTP

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001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
169		169
100%		100%
109.2247	0	109.2247
0.76		0.009
0.124		0.124
15.3		3.25
11		11
0.50764		0.51828
0.76160		0.76160
0.71145		0.71145
1.55543		1.56831
23.79804		5.09700
109.3487	0	109.3487

0.786		0.015
1.3		0.15

no            no            no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020354

Harlowton WWTF, City of  
001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

TN	TN_calc	TP
	15.5	15.5
	100%	100%
0	10.01765	10.01765
	0.25	0.022
	0.22	0.22
	12.68	4.07
	16	16
	0.25393	0.32384
	0.82925	0.82925
	0.95121	0.95121
	1.18611	1.24064
	15.03991	5.04941
0	10.23765	10.23765

	0.56782	0.13004
	1.3	0.15

no

no

no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020478

Red Lodge WWTF

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

TN	TN_calc	TP
57.8		57.8
100%		100%
37.35614	0	37.35614
0.212		0.003
1.2		1.2
21		3.19
16		16
0.23882		0.23267
0.82925		0.82925
0.95121		0.95121
1.17446		1.16973
24.66364		3.73144
38.55614	0	38.55614

0.97302		0.11904
1.3		0.15

no            no            no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020656

Hinsdale County Water and Sewer District WWTP

001

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**Description**

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

TN	TN_calc	TP
36.4		36.4
100%		100%
23.52532	0	23.52532
1.08		0.0495
0.03		0.03
31.2		5.9
21		21
0.50294		0.87957
0.86705		0.86705
1.11257		1.11257
1.28096		1.48396
39.96598		8.75537
23.55532	0	23.55532

1.12953		0.06059
1.3		0.11

no            no            no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0020753

Big Timber WWTF, City of  
001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
60.3		60.3
100%		100%
38.97189	0	38.97189
0.145		0.0055
0.39		0.39
44.4		8.8
15		15
0.16020		0.09825
0.81896		0.81896
0.91142		0.91142
1.12190		1.07339
49.81223		9.44585
39.36189	0	39.36189

0.63711		0.09904
1.3		0.15

no            no            no

4	4	4

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0021211

Glasgow WWTF, City of

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)


TN	TN_calc	TP
36.4		36.4
100%		100%
23.52532	0	23.52532
1.2		0.095
0.5		0.5
28.7		3.24
7		7
0.6		0.6
0.65184		0.65184
0.39028		0.39028
1.99303		1.99303
57.20003		6.45742
24.02532	0	24.02532

2.36544		0.22741
1.3		0.11

yes                no                yes

1.3		0.11
0.83740		0.07086
4	4	4
1.3		0.11

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0021440

Vaughn WWTF

002 (Accounting for the Sun River Watershed TMDL)

**Description**

critical stream flow (14Q5 referenced in Fact Sheet) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)


TN	TN_calc	TP
120		120
100%		100%
77.556	0	77.556
0.88		0.085
0.0894		0.0894
33.1		7.8
9		12
0.6		0.20835
0.71687		0.77908
0.57357		0.76908
1.80042		1.19518
59.59398		9.32240
77.6454	0	77.6454

0.94760		0.09564
1.3		0.11

no            no            no

15.3		1.34
9.85555		1.13560
4	4	4
15.3		1.34

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0021750

Absarokee Sewer District WWTP

001

**Description**

critical stream flow (lowest seasonal flow from DMRs) **[cfs]**

% of Q<sub>s</sub> being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if n<=30, 95% UCL if n>30)

critical effluent flow (design flow, units must match Q<sub>s</sub>) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if n<10, use 0.6)

%tile for n samples at 95% confidence level

Z-score for P<sub>n</sub>

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow (Q<sub>s</sub> + Q<sub>d</sub>)

dilution ratio (Q<sub>s</sub><sup>2</sup>/Q<sub>d</sub>, may be entered instead of Q<sub>s</sub> and Q<sub>d</sub>)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

TN	TN_calc	TP
	0.77363	0.77363
	100%	100%
0	0.5	0.5
	0.046	0.00375
	0.35	0.35
	7.03	0.925
	5	5
	0.6	0.6
	0.54928	0.54928
	0.12384	0.12384
	2.31036	2.31036
	16.24180	2.13708
0	0.85	0.85

	6.71486	0.88218
	0.44	0.033

no            yes            yes

	0.96689	0.07185
	0.62283	0.04628
4	4	4
	0.96689	0.07185

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0021857

Manhattan WWTF

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

TN	TN_calc	TP
1		1
100%		100%
0.6463	0	0.6463
0.365		0.011
0.4		0.4
11.9		0.72
4		4
0.6		0.6
0.47287		0.47287
-0.06806		-0.06806
2.56976		2.56976
30.58012		1.85023
1.0463	0	1.0463

11.91623		0.71414
0.3		0.03

yes                  no                  yes

0.3		0.05097
0.19325		0.03283
4	4	4
0.3		0.05097

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0022535

Havre WWTP, City of

001

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**Description**

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
40.2		40.2
100%		100%
25.98126	0	25.98126
0.6		0.027
1.8		1.8
25.2		3.2
18		18
0.16088		0.23100
0.84668		0.84668
1.02231		1.02231
1.10272		1.14966
27.78853		3.67892
27.78126	0	27.78126

2.362		0.264
1.3		0.11

yes              no              yes

6.66424		1.09474
5.85838		0.91190
4	4	4
6.66424		1.09474

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0022713

Stevensville WWTP

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
15.1		15.1
100%		100%
9.75913	0	9.75913
0.1775		0.012
0.3		0.3
21.31		4.55
9		9
0.6		0.6
0.71687		0.71687
0.57357		0.57357
1.80042		1.80042
38.36700		8.19192
10.05913	0	10.05913

1.316		0.256
0.3		0.03

yes              no              yes

1.12496		0.40191
0.72465		0.25889
4	4	4
1.12496		0.40191

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0023566

Elkhorn Health Care WWTF

001

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
11.8		11.8
100%		100%
7.62634	0	7.62634
5.54		0.01
0.015		0.015
29		8.13
15		15
0.34596		0.41228
0.81896		0.81896
0.91142		0.91142
1.27500		1.33148
36.97511		10.82492
7.64134	0	7.64134

5.602		0.0312
0.3		0.03

yes              no              yes

0.3		7.41601
0.22954		5.41338
4	4	4
0.3		7.41601

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0028665

Sun Prairie Village WWTP

001 (Accounting for the Sun River Watershed TMDL)

**Description**

critical stream flow (14Q5 referenced in Fact Sheet) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)


TN	TN_calc	TP
120		120
100%		100%
77.556	0	77.556
0.88		0.085
0.189		0.189
19.4		5.16
8		20
0.6		0.20236
0.68766		0.86089
0.48922		1.08433
1.88664		1.11641
36.60080		5.76067
77.745	0	77.745

0.967		0.099
1.3		0.11

no            no            no

15.3		1.34
9.85555		1.14081
4	4	4
15.3		1.34

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0030295

Roundup WWTP, City of

001 (Facility Discharge - Musselshell River)

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**Description**

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. -.10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

TN	TN_calc	TP
12		12
100%		100%
7.7556	0	7.7556
0.35		0.277
0.32		0.32
10.17		2.8
1		1
0.6		0.6
0.05		0.05
-1.64485		-1.64485
6.16056		6.16056
62.65286		17.24956
8.0756	0	8.0756

2.819		0.950
1.3		0.15

yes              no              yes

19.68213		0.15
12.67831		0.09662
4	4	4
19.68213		0.15

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0030295

Roundup WWTP, City of

002 (Facility Discharge - Impoundment/Wetlands)

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**Description**

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. -.10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
12		12
100%		100%
7.7556	0	7.7556
0.35		0.277
0.32		0.32
15.1		4.8
5		5
0.6		0.6
0.54928		0.54928
0.12384		0.12384
2.31036		2.31036
34.88638		11.08971
8.0756	0	8.0756

1.719		0.705
1.3		0.15

yes              no              yes

19.68213		0.15
12.67831		0.09662
4	4	4
19.68213		0.15

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0030309

Grass Range WWTP, Town of

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### Description

critical stream flow (7Q10) [cfs]

% of Qs being provided (as decimal, e.g. -.10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) [**converted to MGD**]

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) [**MGD**]

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)


TN	TN_calc	TP
0.5		0.5
100%		100%
0.32315	0	0.32315
0.51		0.085
0.038		0.038
7.3		2.07
1		1
0.6		0.6
0.05		0.05
-1.64485		-1.64485
6.16056		6.16056
44.97206		12.75235
0.36115	0	0.36115

5.188		1.418
1.3		0.15

yes              no              yes

5.64461		0.30717
3.63599		0.19787
4	4	4
5.64461		0.30717

**MPDES ID**

**Facility**

**Outfall**

**Term**

Q<sub>s</sub><sup>1</sup>

% Q<sub>s</sub>

Q<sub>s</sub><sup>2</sup>

C<sub>s</sub> or B

Q<sub>d</sub>

C<sub>max</sub>

n

CV

P<sub>n</sub>

Z<sub>Pn</sub>

TSD

C<sub>d</sub> or E

Q<sub>r</sub>

D

C<sub>r</sub> or C

WQS

WLAc

LTAc

n<sub>AML</sub>

AML

MT0030732

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Ennis WWTP

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### Description

critical stream flow (14Q5) **[cfs]**

% of Qs being provided (as decimal, e.g. - .10 for 10%)

resulting critical stream flow ( $Q_s^1 * \%Q_s$ ) **[converted to MGD]**

critical instream concentration (75%tile if  $n \leq 30$ , 95% UCL if  $n > 30$ )

critical effluent flow (design flow, units must match Qs) **[MGD]**

maximum effluent concentration for POR (from application or DMR data)

number of samples in effluent data set

coefficient of variation for effluent data (if  $n < 10$ , use 0.6)

%tile for n samples at 95% confidence level

Z-score for Pn

calculated TSD multiplier (should be close to Table 3-2 value)

critical effluent concentration - 95%tile (max. effluent concentration for POR \* TSD multiplier)

downstream flow ( $Q_s + Q_d$ )

dilution ratio ( $Q_s^2/Q_d$ , may be entered instead of Qs and Qd)

resulting or downstream pollutant concentration (term to solve for)

water quality standard (from DEQ-7 or rule)

RP?

Wasteload Allocation (Chronic)

Long-Term Average (Chronic, 95th Percentile)

Number of Samples (for AML calculation)

Average Monthly Effluent Limitation (95th Percentile)

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TN	TN_calc	TP
1052		1052
100%		100%
679.9076	0	679.9076
0.17		0.026
0.24		0.24
13.1		4.3
4		4
0.6		0.6
0.47287		0.47287
-0.06806		-0.06806
2.56976		2.56976
33.66383		11.04996
680.1476	0	680.1476

0.182		0.02989
0.3		0.03

no            no            no

4	4	4